

Notice of Allowability

Application No.

09/388,989

Examiner

Marianne L. Padgett

Applicant(s)

COHEN ET AL

Art Unit

1762

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Board decision of 7/28/05.
2. ☒ The allowed claim(s) is/are 1,3,4,6,8-14,17-23 and 33.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying Indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

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1. The following is an examiner's statement of reasons for allowance: The Board has effectively ruled that in order to provide an alternative 2nd plasma composition in preparation for Yoo et al's patterned metallizing, the substituted reactive mixture must be expected to remove a thin layer of the exposed Si surface. The alternative reference not sent up to the Board, Zhao et al (5,660,682), uses Ar + H₂ to remove undesirable polymer &/or oxide on the exposed patterned (Si) surface that would inhibit desired electrical connections, but does not disclose any actual etching of the Si by the H₂, hence also would be considered an improper combination by this reasoning. As seen in either of Zhao et al or Yamazaki (526) applied in previous rejections of record, the plasma mixtures containing H, i.e. using H₂, remove Si oxides, hence native oxides that form on Si surfaces, but as indicated by the Board, the removal of such native oxides from Si surfaces is not considered to read on the removal of a very thin layer of the Si surface required by Yoo et al. Therefore, the following references, which all teach the use of H₂ with Ar &/or He for cleaning, generally before metallizing &/or depositing a barrier layer, are not combinable with Yoo et al, and are only of interest for the expected effects of the claimed 2nd plasma, as they do not suggest preceding it with an essentially Ar plasma. See copending cases to the same assignee &/or overlapping inventors: Subrahmanyam et al (6,693,030 B1, 6,905,965 B2, 6,107,192, 2004,0248404 A1); Cohen et al (6,346,489 B1, 6,313,042, 6,589,890 B2); Carl et al (6,436,267 B1); Narasimhan et al (6,372,301 B1); and SN 09/206,027; as well as updated prior art to Konecni et al (2001/0049192 A1), noting that separately discussed physical effects of Ar or He & chemical effects of H₂ are said to be occurring simultaneously ([0030]); Li (2005/0032367 A1); and Ye et al (6,153,530). Also of interest, but not prior art are Chu et al (6,797,642 B1); Chang et al (6,638,855 B1); Pan et al (2004/0023485 A1); Lui (6,776,170 B2); and Woo et al (6,657,304 B1).

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

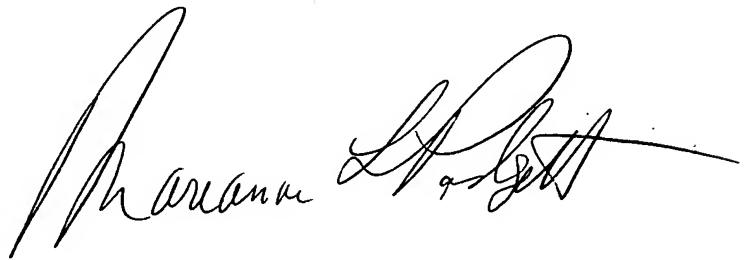
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2. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marianne L. Padgett whose telephone number is (571) 272-1425. The examiner can normally be reached on M-F from about 8:30 a.m. to 4:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks, can be reached at (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MLP 9/4/05

A handwritten signature in black ink, appearing to read "Marianne L. Padgett", with a long horizontal flourish extending to the right.

**MARIANNE PADGETT
PRIMARY EXAMINER**